

RECYCLING TECHNOLOGY



Inside the UPM Shotton mill

Read all about it:

Why Shotton is no run of the mill

At UPM Shotton, quality is king when it comes to recycled paper. **Phil Mellows** visited the UK's largest recycled newsprint mill to find out how this ethos works

Need some top quality recycled newsprint? Call in the sausage inspector! Well, that's probably not his official title. The objects of his expert attention aren't made of pork, beef or even wild boar with chestnuts and thyme, they are the compressed waste paper rolls that ooze like toothpaste out of the backs of lorries on to the warehouse floor of UPM's Shotton recycling plant. Known in the trade as sausages.

Now you might think that waste paper is waste paper, but the sausage inspector knows different. He's looking for contaminants, of course, and dampness – wet paper under pressure is actually a bigger fire risk than dry paper. And his skill also lies in being able to tell just how fresh the consignment is. If newsprint contaminants exceed a certain percentage, the sausage goes back straight back to where it came. Damp paper is also rejected, as is waste paper more than six months old – the less fresh it is, the harder the inks are to remove.

Sausages that pass the quality test could be back on the newsstands with a new headline the very next day. But the sheer speed that the plant converts waste paper into fresh newsprint makes it vulnerable to supply problems – and requires a continuous effort to root out the quality defects that can trip up the process. While, as UPM's director of environmental affairs John Sanderson puts it, "the days of finding a fridge in a bale of paper are long gone", contamination remains a big worry. And as local authorities collect

more co-mingled waste, it's become a growing concern.

"Paper is a soft medium, there's lots you can do to it that will reduce its usefulness," explains Mike Burgess, UPM's recycled paper sourcing manager. "The raw material we're getting has changed, too. There are more maga-

From steel to print

In 1985, when Finnish paper manufacturer UPM-Kymmene took over the former British Steel site at Shotton, just across the North Wales border, the site had already made the headlines as the scene of Europe's biggest ever mass redundancy in 1980, when 6,000 jobs were lost.

Now the site boasts the largest paper recycling plant in Europe and the UK's biggest newsprint manufacturer. Some 640,000 tonnes of waste paper collected from a third of the UK's households arrives at the site each year, where it is processed 24 hours a day into 500,000 tonnes of newsprint for News International's printworks on Merseyside. Produced in 9m wide rolls before being cut to the required size, that's enough paper to cover the nearby M56, including the hard shoulder, every hour! Since converting fully to recycled paper in 2003, later adding its own renewable energy plant, Shotton has reduced its annual carbon emissions by 150,000 tonnes.



Around 640,000 tonnes of waste paper arrives at the Shotton factory each year for recycling

zines than newspapers now, and that makes a different quality of paper. Local authority waste strategies are changing – co-mingled collections increased from 19% in 2004 to 29% in 2006. All their targets are in tonnes, based on weight rather than quality, and there's a link there, I think, to poor quality collections."

Strict specifications

Shotton enforces strict specifications on the waste paper it uses. Less than 10% white office paper, 4% grey or white board, 1% brown board and 0% non-pulpable materials. Beyond the sausage inspector, rigorous screening keeps glass, staples and other contaminants out of the pulp. With the paper milling machines running at 60mph the tiniest shard could rip the web and halt production, while dust in the finished newsprint could cause the press to misprint or misregister colours.

Non-pulpable contaminants amongst the waste paper pulped at Shotton are averaging 1.5% and peak at 3%. That may not sound very much, but it means 10,000 tonnes of material a year is rejected and that, Burgess asserts, "is not good enough". "We've got mixed paper sorting capacity, but if it's full of glass we just have to say no. And it costs us £2M a year just to stick it in the ground. It's a travesty!"

Newsprint production could be disrupted, too. UPM is facing what Burgess calls "a quality squeeze". He explains further: "We're recovering more paper, but growth is slowing. Between 2002 and 2005 it was up by at least 10% each year. In 2008 it increased by only 1.8%. It's not just more tonnes, we want less problems with it. We want to go as far down the supply chain as we can, to get to the very beginning so we can have more control over quality."

“Damp paper is also rejected, as is waste paper more than six months old – the less fresh it is, the harder the inks are to remove”

That means UPM has increased the size of its procurement team across Europe and developed partnerships – not only with local authorities but with vehicle manufacturers to get greater efficiency out of lorries that bring waste paper to Shotton. It advises councils on collection systems and through PR and marketing campaigns targeting the consumer. This year it will be pushing the message as headline sponsor at the LARAC conference in October.

"Where local authorities are concerned we see it as a partnership to achieve better quality," says Burgess. "We integrate into the supply chain where we can and see what we can do to influence local authorities' policies to give their waste paper collections a quality emphasis."

Putting down sustainable roots

The UK recycled 11.6M tonnes of paper in 2008, saving 1.32 tonnes of carbon for every tonne recycled – the rough equivalent of taking three million cars off the road. Yet 86% of paper still goes to landfill, and recycling rates are slowing. There's obviously plenty more that can be done. But according to UPM's director of environmental affairs, John Sanderson, recycling alone cannot provide a truly sustainable solution. "The paper industry is under pressure from non-governmental organisations that want more recycling, but recovered paper is part of a much bigger picture. The ultimate goal should be a sustainable paper industry, not just sustainable paper."

So UPM owns and manages forests as well as paper mills, felling them for virgin timber for paper as well as building materials. The point Sanderson is eager to get across is that the recycled paper industry needs virgin paper to survive, because the pulp fibres disintegrate into dust after the

paper has been recycled six times.

"I reckon we need to be making at least 40% virgin paper to maintain the supply and keep recycling going," he says. "Without virgin paper the world would run out of paper in six months. It begs the question whether it's recycling at all where paper is concerned, because you can't go on recycling it indefinitely. Perhaps we'd be better calling it down-cycling." Not only that. Managing paper production to ensure the right grade of paper is produced by the optimum sustainable methods is another part of the equation. For instance, the chemical pulping of virgin timber dissolves the lignin holding the wood fibres together into a liquor that is a source of energy, making the process better than carbon-neutral. So while newsprint should still be made from mechanically pulped recovered paper, a good, sustainable paper industry would make fine papers from chemically pulped fine papers. Well, nobody said saving the planet was going to be simple.

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